What is claimed is:

1. A home network system, comprising:

a network based on a predetermined protocol;

5   at least one electric device connected to the network; and

a network manager connected to the network, for controlling and monitoring the electric device,

wherein the protocol comprises an application layer for handling a message for controlling and/or monitoring the electric device, a network layer for 10 network-connecting the electric device to the network manager, a data link layer for accessing a shared transmission medium, and a physical layer for providing a physical interface between the electric device and the network manager,

wherein the physical layer further comprises a special protocol for providing an interface with a dependent transmission medium, and the network layer further 15 comprises a home code control sub-layer for managing a home code for network security when accessing the dependent transmission medium.

2. The system of claim 1, wherein the protocol performs an intrinsic function of the electric device or the network manager, and further comprises an application 20 software for providing an interface with the application layer.

3. The system of claim 2, wherein the application software further comprises a network management sub-layer for managing a parameter and/or the electric device and/or network manager accessing the network.

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4. The system of claim 1, wherein the special protocol is a power line

communication protocol when the dependent transmission medium is a power line.

5. The system of claim 1, wherein the special protocol is a wireless communication protocol when the dependent transmission medium is wireless.

6. The system of claim 3, wherein the protocol further comprises a parameter management layer for setting, getting or transmitting a parameter used in the application layer, the network layer, the data link layer or the physical layer upon the request of the network management sub-layer.

7. The system of claim 1, wherein the interface between the physical layer and the data link layer comprises at least one of a frame sending primitive, a frame receiving primitive and a line status transmitting primitive.

8. The system of claim 7, wherein the frame sending primitive and the frame receiving primitive comprise predetermined bytes of a universal asynchronous receiver and transmitter frame.

9. The system of claim 7, wherein the line status transmitting primitive comprises a line status such as a busy or idle status.

10. The system of claim 1, wherein the interface between the data link layer and the network layer comprises at least one of a packet sending primitive, a packet receiving primitive and a data link layer completing primitive.

11. The system of claim 10, wherein the packet sending primitive comprises

a packet, a length of the packet and service priority.

12. The system of claim 10, wherein the packet receiving primitive comprises a packet and a length of the packet.

13. The system of claim 10, wherein the data link layer completing primitive comprises a packet transmission result.

14. The system of claim 13, wherein the data link layer completing primitive comprises a transmission failure reason according to the packet transmission result.

15. The system of claim 1, wherein the interface between the network layer and the application layer comprises at least one of a request message sending primitive, a message receiving primitive and a network layer completing primitive.

16. The system of claim 15, wherein the request message sending primitive comprises a communication cycle identifier, a request message, a length of the request message, a destination address, a source address, a network layer service, response timeout, a transmission interval between repeated notification messages and service priority.

17. The system of claim 15, wherein the message receiving primitive comprises a communication cycle identifier, an event response message, a length of the event response message, a destination address and a source address.

18. The system of claim 15, wherein the network layer completing primitive comprises a communication cycle identifier and a transmission result.

19. The system of claim 18, wherein the network layer completing primitive

5   comprises a transmission failure reason according to the transmission result.

20. The system of claim 18, wherein the network layer completing primitive comprises a retry number according to the transmission result.

10   21. The system of any one of claims 15 to 20, wherein the protocol is applied to the network manager and/or electric device performing a master function.

22. The system of claim 1, wherein the interface between the network layer

15   and the application layer comprises at least one of a request message receiving primitive, a response message sending primitive, an event message sending primitive and a network layer completing primitive.

23. The system of claim 22, wherein the request message receiving

20   primitive comprises a request message, a length of the request message, a destination address, a source address, a network layer service and a duplicate packet check result.

24. The system of claim 22, wherein the response message sending

25   primitive comprises a communication cycle identifier, a response message and a length of the response message.

25. The system of claim 22, wherein the event message sending primitive comprises a communication cycle identifier, an event message, a length of the event message, a destination address, a source address, a network layer service,

5   a transmission interval between repeated notification messages and service priority.

26. The system of claim 22, wherein the network layer completing primitive comprises a communication cycle identifier and a transmission result.

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27. The system of claim 26, wherein the network layer completing primitive comprises a transmission failure reason according to the transmission result.

28. The system of claim 26, wherein the network layer completing primitive

15   comprises a retry number according to the transmission result.

29. The system of any one of claims 22 to 28, wherein the protocol is applied to the electric device performing a slave function.

20   30. The system of claim 2, wherein the interface between the application layer and the application software comprises at least one of a user request primitive, a user download request primitive, a user upload request primitive, a user response primitive, a user event receiving primitive and an application layer completing primitive.

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31. The system of claim 30, wherein the user request primitive comprises

an application service code, a request message, a length of the request message, a destination address, an application layer service, timeout and service priority.

32. The system of claim 30, wherein the user download request primitive
5   comprises an application service code, a download file, an application layer service, a destination address, timeout and service priority.

33. The system of claim 30, wherein the user upload request primitive comprises an application service code, an upload file, an application layer service,
10 a destination address, timeout and service priority.

34. The system of claim 30, wherein the user response primitive comprises an application service code, a response message, a length of the response message and a source address.

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35. The system of claim 30, wherein the user event receiving primitive comprises an event message, a length of the event message and a source address.

20   36. The system of claim 30, wherein the application layer completing primitive comprises an application service code and a service result.

37. The system of claim 36, wherein the application layer completing primitive comprises a failure reason according to the service result.

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38. The system of any one of claims 30 to 37, wherein the protocol is

applied to the network manager and/or electric device performing a master function.

39. The system of claim 2, wherein the interface between the application layer and the application software comprises at least one of a user request receiving primitive, a user response sending primitive and a user event sending primitive.

40. The system of claim 39, wherein the user request receiving primitive comprises an application service code, a request data, a length of the request data and a source address.

41. The system of claim 39, wherein the user response sending primitive comprises an application service code, a response data and a length of the response data.

42. The system of claim 39, wherein the user event sending primitive comprises an application service code, an application service, an event code and a status variable value.

43. The system of any one of claims 39 to 42, wherein the protocol is applied to the electric device performing a slave function.

44. The system of claim 1, wherein the parameter of the physical layer comprises a communication speed.

45. The system of claim 1, wherein the parameter of the data link layer comprises at least one of frame timeout, a maximum frame allowable interval time, a minimum packet allowable interval time, a backoff retry number, a maximum transmission allowable time, a busy check time and a transmission delay time.

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46. The system of claim 1, wherein the parameter of the network layer comprises at least one of a product code, a node address, a cluster code, a home code, a maximum retry number, transmission timeout, a response delay time, a transmission delay time and a duplicate packet elapsed time.

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47. The system of claim 1, wherein the parameter of the application layer comprises at least one of a transmission interval between address request messages, a transmission interval between active event messages, a buffer size, service timeout and a transmission interval between download messages.

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48. The system of any one of claims 1 or 6 or 44 to 47, wherein the network management sub-layer interfaces with. the parameter management layer through at least one of a parameter setting primitive and a parameter getting primitive in order to set or get at least one of the parameters of the physical layer, the data link
20   layer, the network layer and the application layer.

49. The system of claim 48, wherein the parameter management layer interfaces with the physical layer, the data link layer, the network layer or the application layer through at least one of a parameter setting primitive, a parameter
25   getting primitive and a parameter transmitting primitive in order to set, get or transmit at least one of the parameters of the physical layer, the data link layer, the

network layer and the application layer.